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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,550

08/04/2006

Florent Chaffotte

Serie 6322

2099

40582

7590

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AIR LIQUIDE

Intellectual Property

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HOUSTON, TX 77056

EXAMINER

NGUYEN, COLETTE B

ART UNIT

PAPER NUMBER

4162

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,550	<b>Applicant(s)</b> CHAFFOTTE ET AL.	
	<b>Examiner</b> COLETTE NGUYEN	<b>Art Unit</b> 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/04/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 7 and 8**. Are rejected under 35.U.S.C. 102 (b) as been anticipated by Van den Sype et al. (US2002/0104589).
2. Sype et al. teaches a method and apparatus for recycling a quenching gas, such as helium, to be used with a treating gas, such as a carburizing gas, for the treating of components in an atmospheric furnace. Sype's invention comprises: a quenching chamber (equivalent to V1 as claimed) coupled to a gas recovery device (equivalent to V2 as claimed) adapted for receiving spent treating gas and quenching gas which can be recycled between the quenching chamber and the recovery device(paragraph 20). He further specifies an option of a by-passing loop by citing that "a separate vacuum pump could be used in a side process connected to duct 24 before valve 23 to evacuate quenching chamber 20 so that a greater percentage of quenching gas is recovered (paragraph 42). Also (in paragraph 43), he mentions "the oil flooded screw and diaphragm compressors could be replaced with other style compressors and/ or combined into one compressor. He goes on by specifying that " the raffinate could be placed in a separate receiver (Intermediate tank V3 as claimed) and serve as purge gas for the quenching chamber (paragraph 46). Furthermore, the system could run

Art Unit: 1791

continuously therefore helium content of the quenching gas would increase, therefore resulting in a smaller compressor requirement to get the same helium content in the quenching gas, thus further savings. (Paragraph 50). Syype's teachings encompass the claimed method as cited.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

In view of the fact that the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Syype as applied to claim 7 above, and further in view of Pelissier(5,018,551).

Sype teaches an option of a by-pass loop by citing that “a separate vacuum pump could be used in a side process connected to duct 24 before valve 23 to evacuate quenching chamber 20 so that a greater percentage of quenching gas is recovered quickly” (paragraph 42). However, he does not teach the use of an inflatable tank to recover the evacuated gas.

Pelissier , on the other hand, teaches a device for filling a treatment chamber with a compressed gas and for evacuating gas and storing the same in a gas storage tank that has a rigid tank and an elastic tank inside it which allows a relative short filling and draining time without pumping means. (Col 2, line 60-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the option of the elastic tank from Pelissier’s teaching to combine with the teaching of Sype to improve the recovery time of the quenching gas without using any pumping means.

**5. Claims 10 to 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Sype as applied to claim 7 above, and further in view of Bowe (In “Helium recovery and recycling makes Good Business Sense” by Donald J. Bowe, Air products & Chemicals inc., Allentown, Pa.).

Sype teaches a method of recycling quenching gas, of at least one gas such as helium, however he does not specifically teaches how a gas mixture is controlled if used. Bowe teaches a generic helium recovery system to be used in any process with

Art Unit: 1791

recycled helium stored independently from a virgin helium supply for back up with analyzer and control valves for mixing and make-up.

It would have been obvious for one of an ordinary skill in the art to have separated tanks for the different gases used for quenching, and then add them proportionally as required by the in line analyzer to a dedicated head tank where the filling can be controlled in parallel and independently from the quenching sequences with computerized control as mentioned by Bowe of Air products to save time.

### **Conclusion**

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patents: US 7,150,777 and US 5,158,625.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Mc Neil can be reached on (571)-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 1791

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/  
Examiner, Art Unit 4162

CN  
July 25, 2008

/Melvin C. Mayes/  
Primary Examiner, Art Unit 1791